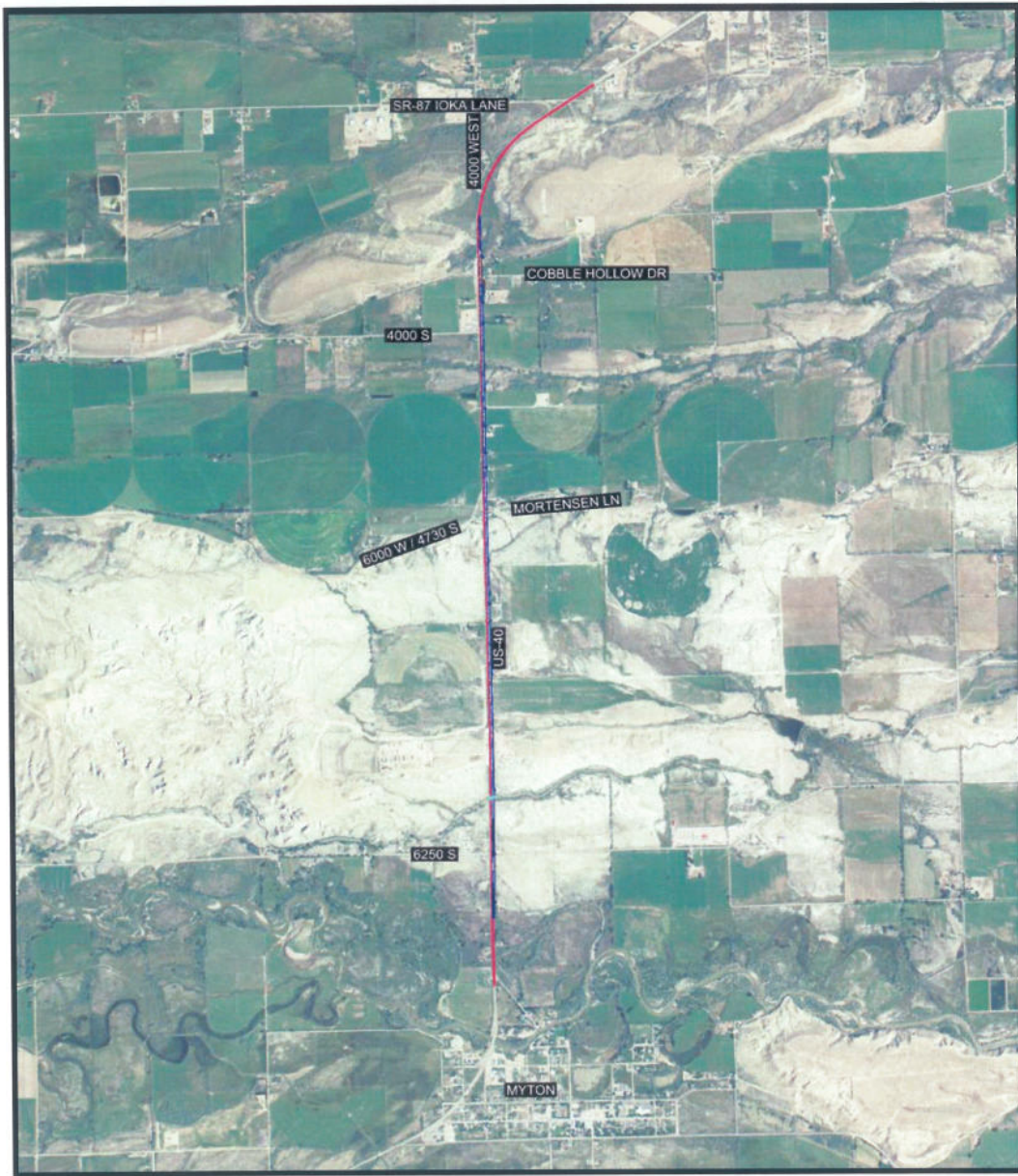


**UTAH DEPARTMENT OF TRANSPORTATION
Region 3**

**CONCEPT REPORT
For**

US-40 MP 106-109, Myton Bench Roadway Widening

January 21, 2013



CONCEPT REPORT
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SECTION 1: General Information

Project Name:	US-40 MP 106-109, Myton Bench Roadway Widening		
Project Manager:	Brian Phillips	County:	Duchesne
Pin Number:	10692	Begin Mile Post:	106
Project Number:	S-0040(103)131	End Mile Post:	109
Route Number:	040	Design Year:	2013
Functional Classification:	System Priority Urban	Design Speed:	65

Describe the Purpose/Need for this Project:

This project will consist of widening US-40 to add a NB passing lane, center median/left-turn lane, and full NB outside shoulder from Myton to beyond the crest vertical curve at MP 108.9 (south of the SR-87 Ioka Lane junction at approximately MP 109.5).

The purpose of this project is to provide additional passing opportunities and to provide a median/left-turn lane along US-40 within the project limits. US-40 has heavy truck volumes along with hilly and mountainous terrain from Heber City thru Vernal City. UDOT's desire is to provide additional passing opportunities, where practical and feasible, in order to improve safety. The addition of the median/left-turn lane will also improve safety due to the numerous accesses along US-40.

Major Project Risks:

Potential utility impacts associated with widening



15 million in funding split over 2 projects separated by 3 years

Configuration of accesses with regards to grading and intersection sight distance due to ROW constraints, use of barrier, and cut/fill heights.

Project Estimate and Timeline:

Planning Estimate:		Proposed Construction FY:	
Total Project Cost (Current Year):	\$11,353,000	Estimated Construction Duration:	
Construction Year Estimate (2015):	\$14,844,000	Recommended Commission Approved Amount:	

Signature Block:

 2013.01.22 09:15:06 -07'00'			
Project Manager	Date	Region Preconstruction Engineer	Date
Region STIP Workshop Chair	Date	Region Director	Date
 <small>Digitally signed by Ryan D. Richins DN: c=US, o=TrustID personal certificate, ou=Utah, cn=Ryan D. Richins, email=ryanr@horrocks.com, 0.9.2342.19200300.100.1.1=A01413E000001369 C98AA470001A4C1 Date: 2013.01.21 17:19:37 -07'00'</small>			
Prepared By	Date		

SECTION 2: Design Information (Executive Summary)

Roadway / Pavement Summary (Activities 54C, 58C, 76C)	Estimated Construction Cost:	\$6,809,941
<p>The existing US-40 roadway consists of two lanes, 1 lane in each direction, for the entire stretch from approximately MP 106 to 109, with an additional NB passing lane from MP 106 to 107.9, an additional SB passing lane from MP 108.4 to 109.5 (SR-87 junction), and left turn lanes at MP 108.5 and 109.5.</p> <p>This project will consist of widening US-40 from Myton to approximately ½ - mile south of the SR-87 junction (MP 106 to 108.9) to add a NB passing lane, a center median/left-turn lane, and a full NB outside shoulder. The NB passing lane will be extended from MP 107.9 to 108.9, the center median/left-turn lane will be extended from MP 106 to 108.5 and from MP 108.5 to 108.9, and the NB outside shoulder will be widened from MP 106 to 108.9. The project will tie in with the existing roadway at approximately MP 108.9, south of the SR-87 junction.</p> <p>The widening will begin at approximately MP 106, south of the 6250 South intersection, in order to establish the left turn lanes for this intersection. The NB passing lane will terminate prior to SR-87 junction intersection at approximately MP 108.9, north of the existing crest vertical curve. Pavement widening will occur on the NB side of the roadway only, in order to reduce project costs. Precast concrete barrier will be used in various segments throughout the project in order to avoid additional ROW impacts.</p> <p>There are also approximately 17 property accesses along the NB side of US-40 that will need to be reconfigured in order to tie-in with the widened roadway. In several instances these driveways occur in areas requiring barrier. Gaps will need to be provided in the barrier in these areas to allow access. Grading, intersection sight distance, barrier length of need, and crash cushion grading will need to be addressed at these accesses. Due to the limited ROW additional slope easements and/or design waivers and deviations may be required for intersection sight distance and barrier length of need.</p> <p>Widening US-40 in the NB direction, rather than the SB direction, is recommended at this time due to the traffic patterns and volumes, percent time spend following (PTSF), predominant profile grade, and safety concerns associated with accesses. During the PM peak hour 55 percent of the vehicles on US-40 are traveling NB, resulting in a lower average travel speed and higher percent time spent following for NB traffic. The profile of the roadway is predominately more uphill in the NB direction. Also, there are approximately 17 accesses in the NB direction, as opposed to 8 accesses in the SB direction. These factors combined have the potential for more traffic delay and traffic incidents in the NB direction due to higher traffic volumes (particularly heavy trucks), slower speeds, and vehicles slowing down within the lane in order to turn off onto the accesses. The widening will provide a second lane for passing</p>		

slower vehicles and provide a wider shoulder for vehicles slowing down to turn off onto accesses.

A future project may widen the roadway on the SB side of the road in order to add an additional SB passing lane and full SB outside shoulder. At that time US-40 would be widened to a five lane facility from MP 106 to approximately MP 108.9. The proposed widening to the NB side of the road will not restrict or limit any future widening to the SB side.

The Region Pavement Engineer's recommended preliminary pavement design consists of 8" HMA, 8" Untreated Base Course, and 15" of Granular Borrow, with a Microsurface course. The recommendation for the existing asphalt is a 3" mill and overlay with a Microsurface course, dependent upon project budget and additional pavement analysis. The estimated cost of the mill and overlay is approximately \$1,400,000.

Traffic and Safety Summary (Activity 64C)	Estimated Construction Cost:	\$422,686
<p>An evaluation of potential passing lanes on US-40 northeast of Myton, Utah (from approximately milepost (MP) 104.5 to MP 110) was performed. This stretch of US-40 had an Average Annual Daily Traffic (AADT) of approximately 8,320 vehicles per day during the year 2011. During the PM peak hour, 55 percent of the vehicles on the road are traveling in the northeast direction. Based on past traffic counts, the average weekday peak hour volume on this segment of US-40 during the year 2012 was approximately 1,100 vehicles per hour. Most of this stretch consists of a two-lane cross-section; however, there are short passing lanes in each direction (northeast-bound from approximately MP 106 to MP 107.9 and southwest-bound from approximately MP 109.5 to MP 108.4). There are passing zones throughout the two lane section as well, which including the passing lanes described above accounts for passing opportunities of approximately 39 percent of the stretch in the northeast-bound direction and 47 percent in the southwest-bound direction. There are a number of access points along this stretch of highway that provide access to farms, residences, businesses and other side streets. Along this stretch of US-40 there is an average of approximately 9 accesses per mile. The overall level of service of this section of US-40 was evaluated using the Highway Capacity Manual Methodology (HCM 2010) for a two-lane highway both under existing conditions and with the extension of the existing passing lanes in the area. Using this methodology, the LOS is based on two measures of effectiveness: the average travel speed (ATS) and the percent time-spent-following (PTSF), both of which are a function of passing capacity and passing demand. The table below highlights the benefit to the LOS during the PM peak hour resulting from the extension of the NB passing lane from approximately MP 106 to 108.9.</p>		

Scenario (2012 PM Peak Hour)	ATS (mph)	PTSF (%)	LOS
Northbound Existing Conditions	51.6	58.8	C
Northbound w/ Extension of Passing Lane	53.8	52.0	C
Southbound Existing Conditions	50.9	53.0	C

In addition, crash data over the last three years (2009 through 2011) along US-40 within the project area (MP 106 to 110) was evaluated. Over the last three years, there was a crash rate of approximately 1.43 crashes per million vehicle miles traveled, which is consistent with the average crash rate on other similar UDOT facilities. The severe crash rate was approximately 8.6 severe crashes (incapacitating injury or fatal) per 100 million vehicle miles traveled. This rate is also consistent with the average severe crash rate observed on other similar UDOT facilities. The table below shows the total number of crashes and crash rates over the last three years for US-40 from MP 106 to 110. Most of the crashes that occurred through this stretch were single vehicle crashes (23 crashes), 14 of which involved either wild or domestic animals in the road. The other most common manners of collision included side swipes (11 crashes), rear ends (9 crashes), and angle collisions (7 crashes). Almost half of the total crashes occurred within two different intersections: 6250 South (US-40 MP 106.134) (10 crashes) and SR-87 (US-40 MP 109.538) (12 crashes). Most of the crashes within the intersection of 6250 South were angle collision. On the other hand, most of the crashes within the intersection of SR-87 were either side swipe or single vehicle crashes.

US-40 (MP 106 to 110) Crash Level Only Info, 2009-2011						
CONFIDENTIAL: This report is protected under 23 USC 409						
Year	No. of Crashes	Crash Rate ^a	No. of Severe Crashes	Severe Crash Rate ^b	AADT	Average Severity ^c
2009	20	1.76	2	17.60	7,785	1.69
2010	10	0.87	1	8.71	7,865	1.88
2011	20	1.65	0	0.00	8,320	1.53
Total	50	1.43	3	8.57		1.65
Road Classification:						
Rural Principal Arterial						
UDOT Averages:		1.56 ± 0.13		7.6 ± 1.3	0 to 30K	1.50

^a Crashes per Million Vehicle Miles Traveled

^b Severe Crashes (Incapacitating Injury or Fatal) per 100 Million Vehicle Miles Traveled

^c Crash Severity ranges from 1 (No Injury) to 5 (Fatality)

The estimated construction cost for Traffic and Safety includes the cost of pavement marking paint, precast concrete barrier, crash cushions, and rumble strips (see attached cost estimate).

Structures Summary (Activity 62C)	Estimated Construction Cost:	\$100,650
<p>The existing Box Culvert structure 0E1096 for the Dry Gulch Canal crossing (MP 106.38) will need to be extended on the NB side and new headwalls constructed.</p> <p>The existing structure is in very good condition and has a sufficiency rating of 77.5. The structure does have some minor deterioration and damage, but does not have any spalls, excessive cracking, or indication of settlement. See the attached Structure Inventory and Appraisal Sheet and Bridge Inspection Comments for additional information.</p>		

Environmental Summary (Activity 52C)	Estimated Mitigation Cost:	\$70,606
<p>Potential environmental concerns:</p> <ul style="list-style-type: none"> • If project causes "substantially changes" to the roadway, a public hearing or an opportunity for a public hearing required. (Assume opportunity for hearing only) • No right-of-way acquisition anticipated. • No relocations anticipated. • Section 106 cultural resources survey required, including consultation with the Utah SHPO. • Preliminary reviews have identified potential Section 4(f) sites. If federal funds involved, a Section 4(f) Evaluation required (pending eligible 4(f) sites). • No Section 6(f) resources (public parks and recreational facilities built or enhanced with Land and Water Conservation Fund monies) identified in the project area. • Potential Ute Ladies'-tresses suitable habitat present in the project area, survey required (July-August). • Type I project requiring a noise impacts analysis study in accordance with the UDOT Noise Abatement Policy (revised January 10, 2012). • Project crosses Dry Gulch Canal and the Cobble Hollow Drainage. In addition, wetlands are present alongside roadway (some likely to be non-jurisdictional). A wetland delineation required to determine extent of impacts. (Assume permit to be done by others.) • Low potential for discovery of hazardous waste; updated review of federal and state databases recommended. • Project compatible with land use in the area. • The study area is not located in a CO non-attainment/maintenance area. • No impacts anticipated to farmlands, floodplains, wild and scenic rivers, wildlife, and visual and aesthetic resources. • Best management practices needed to address air and water quality 		

issues during construction (e.g., fugitive dust, erosion and sediment control, pollution control, invasive species).

- Temporary construction impacts to traffic mobility and thereby, to social and economic conditions in the vicinity; no disproportionately high and adverse impacts on environmental justice populations anticipated.

A Categorical Exclusion document is anticipated for this project.

Right of Way Summary (Activity 56C)	Estimated Property Cost:	\$0.00
No additional ROW is anticipated for construction of the roadway widening. Slope easements and/or temporary easements may be required for construction and regrading of accesses, particularly in areas requiring roadside barrier.		
If design waivers and deviations are not obtained for intersection sight distance and barrier length of need then perpetual slope easements will likely be required in order to accommodate all required grading.		

Utility and Railroad Summary (Activity 68C)	Estimated Relocation Cost:	\$498,000
Potential utility impacts associated with the roadway widening:		
<p>UDOT Drainage/Hydraulics: ^{A,B}</p> <ul style="list-style-type: none"> • Pipe culvert crossings at MP 106.52, 106.89, 107.14, 107.44, 107.51, 107.54, 107.74, 108.14, 108.24, 108.72, 109.08, and 109.2 that will be required to be extended. ^{A,B} • Box culvert structure 0E1096 at MP 106.38 that will be required to be extended (see Structures Summary). ^{A,B} <p>Moon Lake Electric: ^{A,B}</p> <ul style="list-style-type: none"> • Overhead power within UDOT ROW along SB US-40 throughout project. May require relocation and/or raising poles in order to accommodate new cut/fill slopes. ^B • Overhead power crossings of US-40 at MP 106.13, 106.53, 106.91, 107.21, 107.28, 107.68, 108.06, 108.16, 108.39, and 108.63. Crossings may require relocation and/or raising poles in order to accommodate roadway widening. ^{A,B} • Eight buried power crossings from MP 106 to 109.5. Buried crossings will need to be verified with SUE work. ^{A,B} <p>Johnson Water District: ^{A,B}</p> <ul style="list-style-type: none"> • 14-inch PVC waterline without tracer wire under SB US-40 throughout project, approximately 12' deep. ^B • Pressure Reducing Valve (PRV) vaults and valves approximately 6' outside of SB pavement from MP 106 to 109.27. ^B • 8-inch PVC waterline without tracer wire under NB US-40 throughout project. ^A • 8-inch PVC waterline crossing US-40 at MP 108.39. Location and depth will need to be verified by SUE work. ^{A,B} • 6-inch PVC waterline crossing US-40 at MP 109. Location and depth will need to be verified by SUE work. ^{A,B} <p>El Paso Gathering: ^{A,B}</p> <ul style="list-style-type: none"> • 12-inch steel low pressure gas (100 PSI), 6-inch steel water disposal line, and 4-inch HDPE gas line crossing US-40 at MP 106.9. All utilities bored together at 8-10' depth. ^{A,B} <p>Questar Gas: ^{A,B}</p> <ul style="list-style-type: none"> • 4-inch HP gas line outside of NB US-40 throughout project. ^A • 6-inch HP gas line outside of NB US-40 from MP 106 to 108.23. ^A • 2-inch IHP gas line crossing US-40 at MP 106.64. ^{A,B} • 2-inch IHP gas line outside of NB US-40 from MP 106.64 to MP 106.66. ^A • ¾-inch HP gas tap at MP 106.66. ^{A,B} • ¾-inch HP gas tap at MP 107.04. ^{A,B} 		

- 1 ¼-inch and ¾-inch IHP gas line outside of NB US-40 from MP 107.04 to 107.1. ^A
- 1 ¼-inch and ¾-inch IHP gas line crossing US-40 at MP 107.1. ^{A,B}
- ¾-inch HP gas tap at MP 107.59. ^{A,B}
- 1 ¼-inch IHP gas line crossing US-40 at MP 107.59. ^{A,B}
- 2-inch IHP gas line outside of NB US-40 from MP 107.71 to 107.73. ^A
- ¾-inch HP gas tap at MP 107.73. ^{A,B}
- 4-inch HP gas tap at MP 108.23. ^{A,B}
- ¾-inch HP gas tap at MP 108.00. ^{A,B}
- ¾-inch HP gas tap at MP 108.17. ^{A,B}
- ¾-inch HP gas tap at MP 108.38. ^{A,B}
- 1 ¼-inch IHP gas line parallel to 4-inch HP gas line outside of NB US-40 from MP 108.38 to 108.43. ^A
- ¾-inch HP gas tap heading east at MP 108.62. ^A

Strata Networks: ^A

- Phone line outside of NB US-40 throughout project. ^A

Fiber Optics: ^B

- Fiber optic line outside of SB US-40 throughout the project. ^B

Note: The utility impacts have been labeled according to potential phasing impacts.

^A Utility is impacted by widening to the NB side.

^B Utility may be impacted by future widening to the SB side.

Additional SUE work will need to be performed during design in order to verify utility information and to identify any additional utility impacts.

ITS Summary (Activity 66C)	Estimated Construction Cost:	\$213,900
UDOT does not have any existing ITS facilities along this stretch of US-40. It is anticipated that ITS future use conduits, consisting of four 1-D conduits, would be installed with this project.		

(This may be an additive or eliminated)

Public Involvement Summary (Activity 60C)	Estimated Cost:	\$50,000
Public involvement will require coordination with local municipalities, local residences, and local businesses regarding project construction schedule, traffic impacts, and access impacts.		

Design Exceptions, Waivers, and Deviations Summary:
<p>Design Exceptions:</p> <ul style="list-style-type: none"> • None <p>Design Waivers:</p> <ul style="list-style-type: none"> • Potential design waiver for intersection sight distance at accesses due to limited ROW and slope terrain <p>Deviation from Standards:</p> <ul style="list-style-type: none"> • Potential deviation from standards for barrier length of need at accesses due to limited ROW, slope terrain, and grading requirements of barrier and crash cushions.

Appendix

Complete the Following:

Date Received	Deliverable
	Operational Safety Report (Activity # 50C)
	Preliminary Roadway Design (Activity # 54C)
	Pavement Design (Activity # 58C/76D)
	Region Traffic and Safety Recommendations (Activity # 64C)
	Bridge Inventory & Recommendation Report (Activity # 62C)
	Environmental Concept (Activity # 52C)
	Right of Way Concept (Activity # 56C)
	Utility Inventory (Activity # 68C)
	ITS Recommendations (Activity # 66C)
	Public Involvement Plan (Activity # 60C)
	Media Relations Form Complete (Activity # 78C)

[illegible]

PIN 10692 PROJECT # S-0040(103)131 PROJECT NAME US-40 MP 106-109, MYTON BENCH ROADWAY WIDENING
Cost Estimate - Concept Level

Prepared By Ryan Richins Date 1/21/2013

Approximate Route Reference Post (BEGIN) =	106	(END) =	108.900
Accumulated Mileage (BEGIN) =	106	(END) =	108.900
Project Length =	2.900	miles	15,312 ft
Current FY Year (July-June) =	2013		
Assumed Construction FY Year =	2017		
Construction Items Inflation Factor =	1.34	4 yrs for inflation	
Assumed Yearly Inflation for Engineering Services (PE and CE) (%/yr) =	3.0%		
Assumed Yearly Inflation for Urban Residential Right of Way (%/yr) =	1.0%		
Assumed Yearly Inflation for Urban Commercial Right of Way (%/yr) =	1.0%		
Assumed Yearly Inflation for non-Urban Right of Way (%/yr) =	0.0%		
Items not Estimated (% of Construction) =	10.0%		
Preliminary Engineering (% of Construction + Incentives) =	8.0%		
Construction Engineering (% of Construction + Incentives) =	10.0%		

Construction Items	Cost	Remarks
Roadway and Drainage	\$6,809,941	
Traffic and Safety	\$422,686	
Structures	\$100,650	
Environmental Mitigation	\$70,606	
ITS	\$213,900	
	Subtotal	\$7,617,783
	Items not Estimated (10%)	\$761,778
	Construction Subtotal	\$8,379,561
P.E. Cost	P.E. Subtotal	\$670,365 8%
C.E. Cost	C.E. Subtotal	\$837,956 10%
Right of Way Urban/Suburban Residential	Right of Way Subtotal	\$0
Right of Way Urban Suburban Commercial	Right of Way Subtotal	\$0
Right of Way non-Urban/Suburban	Right of Way Subtotal	\$0
Utilities	Utilities Subtotal	\$498,000
Incentives	Incentives Subtotal	\$121,273
Miscellaneous	Miscellaneous Subtotal	\$0

Cost Estimate (ePM screen 505)	2013	2017
P.E.	\$670,000	\$754,000
Right of Way	\$0	\$0
Utilities	\$498,000	\$665,000
Construction	\$8,380,000	\$11,190,000
C.E.	\$838,000	\$943,000
Incentives	\$121,000	\$162,000
Aesthetics	1% \$84,000	\$112,000
Change Order Contingency	9% \$762,000	\$1,018,000
UDOT Oversight	\$0	\$0
Miscellaneous	\$0	\$0
TOTAL	\$11,353,000	\$14,844,000

PROPOSED COMMISSION REQUEST	TOTAL \$11,353,000	TOTAL \$14,844,000
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Roadway and Drainage

Item #	Item	Quantity	Units	Price	Cost	Remarks
Roadway and Drainage						
012850010	Mobilization	1	Lump	\$625,000.00	\$625,000	Usually 7-10% of construction
013150010	Public Information Services	1	Lump	\$50,000.00	\$50,000	
015540005	Traffic Control	1	Lump	\$300,000.00	\$300,000	Usually 3-5% of construction
01557001*	Maintenance of Traffic	1	Lump	\$100,000.00	\$100,000	
015720010	Dust Control & Watering	1898	1000 gal	\$24.00	\$45,552	
017210010	Survey	1	Lump	\$90,000.00	\$90,000	Usually 1% of construction
020560015	Granular Borrow (Plan Quantity)	23897	Cu yd	\$24.00	\$573,528	15"
022310020	Clearing and Grubbing	9	Acre	\$2,000.00	\$18,514	
023160020	Roadway Excavation (Plan Quantity)	63177	Cu yd	\$10.00	\$631,770	
026101190	36 Inch - Culvert Metal Pipe, Class C, Corrugated	285	ft	\$100.00	\$28,500	
026101388	24 Inch Irrigation/Storm Drain, Class C, smooth	8175	ft	\$45.00	\$367,875	
026330130	Concrete Drainage Structure 5 ft to 7 ft deep - CB 9	38	Each	\$3,500.00	\$133,000	
027210020	Untreated Base Course (Plan Quantity)	12045	Cu yd	\$30.00	\$361,350	8"
027350010	Micro-Surfacing	114482	Sq yd	\$2.75	\$314,826	
027410040	HMA - 3/4 Inch	22795	Ton	\$85.00	\$1,937,563	8" (New HMA) 153 lb/ft ³
027410040	HMA - 3/4 Inch	11371	Ton	\$85.00	\$966,528	3" (Mill & Overlay) 153 lb/ft ³
027480010	Liquid Asphalt MC-70 or MC-250	10	Ton	\$1,100.00	\$11,096	(New HMA) 0.05 gal/yd ² , 240 gal/ton
027480010	Liquid Asphalt MC-70 or MC-250	33	Ton	\$1,100.00	\$36,334	(Mill & Overlay) 0.12 gal/yd ² , 240 gal/ton
027850060	Emulsified Asphalt LMCRS-2	97	Ton	\$550.00	\$53,350	0.5 gal/yd ² , 250 gal/ton
029610040	Rotomilling - 3 Inch	66062	Sq yd	\$2.50	\$165,155	
Roadway and Drainage Subtotal					\$6,809,941	Back to Main

Traffic, Safety & ITS

	Item	Quantity	Units	Price	Cost	Remarks
Traffic						
028430010	Crash Cushion Type B	10	Each	\$1,700.00	\$17,000	
028440010	Precast Concrete Barrier - 32 Inch (New Jersey Shape)	8955	ft	\$42.00	\$376,110	
028440080	Precast Concrete Barrier - 32 Inch (New Jersey Shape), Sloped End Section	10	Each	\$1,400.00	\$14,000	
027650050	Pavement Marking Paint	330	gal	\$24.00	\$7,920	
027610023	Longitudinal Rumble Strips - Asphalt	30624	ft	\$0.25	\$7,656	
Traffic and Safety Subtotal					\$422,686	
ITS						
135530035	1D Conduit	17825	ft	\$12.00	\$213,900	Future Use (4)
ITS Subtotal					\$213,900	Back to MAIN

Structures

Item #	Item	Quantity	Units	Price	Cost	Remarks
Hydraulics						
	Extend Box Culvert	671	sq ft	\$150.00	\$100,650	
Structures Subtotal				\$100,650	Back to MAIN	

Environmental and Landscaping

Item #	Item	Quantity	Units	Price	Cost	Remarks
Temporary Erosion Control						
015710030	Silt Fence	17825	Ft	\$1.25	\$22,281	
Landscaping						
029120050	Strip, Stockpile, Spread Topsoil	30735	sq yd	\$1.50	\$46,103	
029220030	Broadcast Seed	6	acre	\$350.00	\$2,223	
Environmental Mitigation Subtotal					\$70,606	Back to MAIN

Utilities, Right of Way, and Incentives

Item #	Item	Quantity	Units	Price	Cost	Remarks
Utilities						
	Relocate Water Lines	1	Lump	\$185,000.00	\$185,000	
	Relocate Gas Line	1	Lump	\$280,000.00	\$280,000	
	Relocate Power Line	1	Lump	\$10,000.00	\$10,000	
	Relocate Phone	1	Lump	\$23,000.00	\$23,000	
Utilities Subtotal					\$498,000	
Right-of-way						
	Urban/Suburban Residential	0	sq ft		\$0	
	Urban/Suburban Commercial	0	sq ft		\$0	
	non-Urban/Suburban Residential	0	sq ft		\$0	
	non-Urban/Suburban Commercial	0	sq ft		\$0	
	non-Urban/Suburban Farm	0	sq ft		\$0	
Right-of-Way Subtotal					\$0	
Incentives						
	HMA Properties	25624	Ton	\$3.00	\$76,873	Assume 75% of max
	HMA Smoothness	6	Lane Miles	\$150.00	\$33,750	Assume 75% of max
	Early Completion	1	Lump	\$10,650.00	\$10,650	A + B Bidding
Incentives Subtotal					\$121,273	



SCALE:
500:1

DATE:
01/18/13

FIGURE 1 of 3

US-40 MP 106-109, MYTON BENCH ROADWAY WIDENING

2162 West Grove Parkway
Suite 400
Pleasant Grove, UT 84062
(801) 763-5100





SCALE:
500:1

DATE:
01/18/13

FIGURE 2 of 3

US-40 MP 106-109, MYTON BENCH ROADWAY WIDENING

HORROCKS
ENGINEERS

2162 West Grove Parkway
Suite 400 Grove, UT 84062
Phone: (801) 763-5100
Fax: (801) 763-5100



SCALE:
500:1

DATE:
01/15/13

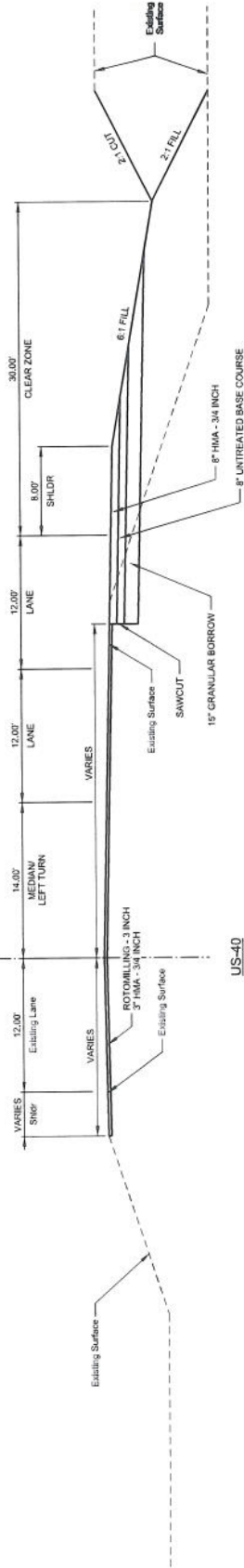
FIGURE 3 of 3

US-40 MP 106-109, MYTON BENCH ROADWAY WIDENING

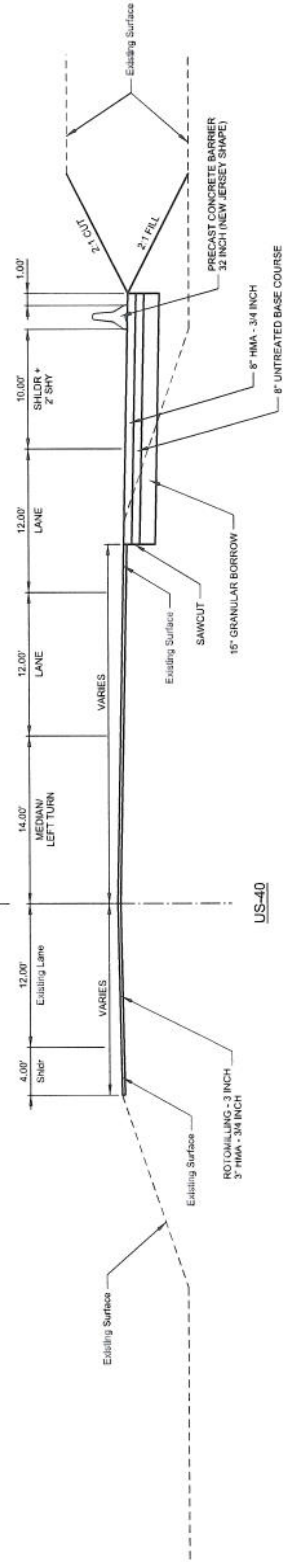
HORROCKS
ENGINEERS

2162 West Grove Parkway
Suite 400
Pleasant Grove, UT 84062
(801) 763-5100

TYPICAL SECTION NO. 1
US-40



TYPICAL SECTION NO. 2
US-40



DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET WITH PASSING LANE WORKSHEET

General Information		Site Information	
Analyst	Kelly Ash	Highway of Travel	US-40
Agency or Company	Horrocks Engineers	From/To	MP 104.5 to 110
Date Performed	1/3/2013	Jurisdiction	UDOT
Analysis Time Period	PM Peak Hour	Analysis Year	2012
Project Description: Northbound (Widening)			
Input Data			
<input checked="" type="checkbox"/> Class I highway <input type="checkbox"/> Class II highway <input type="checkbox"/> Class III highway			
Shoulder width (ft)	10.0		
Lane Width (ft)	12.0		
Segment Length (mi)	5.5		
Total length of analysis segment, L_t	5.5		
Length of two-lane highway upstream of the passing lane, L_u	0.5		
Length of passing lane including tapers, L_{pl}	2.9		
Average travel speed, ATS_d (from Directional Two-Lane Highway Segment Worksheet)	50.1		
Percent time-spent-following, $PTSF_d$ (from Directional Two-Lane Highway Segment Worksheet)	76.3		
Level of service ¹ , LOS_d (from Directional Two-Lane Highway Segment Worksheet)	D		
Average Travel Speed			
Length of the downstream highway segment within the effective length of passing lane for average travel speed, L_{de} (Exhibit 15-23)	1.70		
Length of two-lane highway downstream of effective length of the passing lane for avg travel speed, $L_d = L_t - (L_u + L_{pl} + L_{de})$	0.40		
Adj. factor for the effect of passing lane on average speed, f_{pl} (Exhibit 15-28)	1.11		
Average travel speed including passing lane ² , $ATS_{pl} = (ATS_d * L_t) / (L_u + L_d + (L_{pl}/f_{pl}) + (2L_{de}/(1+f_{pl}ATS_d)))$	53.8		
Percent free flow speed including passing lane, $PFFS_{pl} = (ATS_{pl} / FFS)$	85.7		
Percent Time-Spent-Following			
Length of the downstream highway segment within the effective length of passing lane for percent time-spent-following, L_{de} (Exhibit 15-23)	5.67		
Length of two-lane highway downstream of effective length of the passing lane for percent-time-following, $L_d = L_t - (L_u + L_{pl} + L_{de})$	-3.57		
Adj. factor for the effect of passing lane on percent time-spent-following, $f_{pl,PTSF}$ (Exhibit 15-26)	0.62		

Percent time-spent-following including passing lane ³ , $PTSF_{pl}(\%)$ $PTSF_{pl} = PTSF_d [L_u + L_d + f_{pl, PTSF} L_{pl} + ((1 + f_{pl, PTSF})/2) L_{de}] / L_t$	52.0
Level of Service and Other Performance Measures⁴	
Level of service including passing lane LOS_{pl} (Exhibit 15-3)	C
Peak 15-min total travel time, $TT_{15}(\text{veh-h})$ $TT_{15} = VMT_{15}/ATS_{pl}$	17.8
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	696.6
Effective width, W_v (Eq. 15-29) ft	32.00
Effective speed factor, S_f (Eq. 15-30)	5.07
Bicycle level of service score, BLOS (Eq. 15-31)	8.64
Bicycle level of service (Exhibit 15-4)	F
Notes	
1. If $LOS_d = F$, passing lane analysis cannot be performed. 2. If $L_d < 0$, use alternative Equation 15-18. 3. If $L_d < 0$, use alternative Equation 15-16. 4. v/c, VMT_{15} and VMT_{60} are calculated on Directional Two-Lane Highway Segment Worksheet.	

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET WITH PASSING LANE WORKSHEET

General Information		Site Information	
Analyst	Kelly Ash	Highway of Travel	US-40
Agency or Company	Horrocks Engineers	From/To	MP 104.5 to 110
Date Performed	1/3/2013	Jurisdiction	UDOT
Analysis Time Period	PM Peak Hour	Analysis Year	2012
Project Description: Southbound Existing			
Input Data			
<input checked="" type="checkbox"/> Class I highway <input type="checkbox"/> Class II highway <input type="checkbox"/> Class III highway			
Shoulder width (ft)	4.0		
Lane Width (ft)	12.0		
Segment Length (mi)	5.5		
Total length of analysis segment, L_t	5.5		
Length of two-lane highway upstream of the passing lane, L_u	1.0		
Length of passing lane including tapers, L_{pl}	1.1		
Average travel speed, ATS_d (from Directional Two-Lane Highway Segment Worksheet)	49.0		
Percent time-spent-following, $PTSF_d$ (from Directional Two-Lane Highway Segment Worksheet)	71.3		
Level of service ¹ , LOS_d (from Directional Two-Lane Highway Segment Worksheet)	D		
Average Travel Speed			
Length of the downstream highway segment within the effective length of passing lane for average travel speed, L_{de} (Exhibit 15-23)	1.70		
Length of two-lane highway downstream of effective length of the passing lane for avg travel speed, $L_d = L_t - (L_u + L_{pl} + L_{de})$	1.70		
Adj. factor for the effect of passing lane on average speed, f_{pl} (Exhibit 15-28)	1.11		
Average travel speed including passing lane ² , $ATS_{pl} = (ATS_d * L_t) / (L_u + L_d + (L_{pl}/f_{pl}) + (2L_{de}/(1+f_{pl,ATS})))$	50.9		
Percent free flow speed including passing lane, $PFFS_{pl} = (ATS_{pl} / FFS)$	82.8		
Percent Time-Spent-Following			
Length of the downstream highway segment within the effective length of passing lane for percent time-spent-following, L_{de} (Exhibit 15-23)	6.58		
Length of two-lane highway downstream of effective length of the passing lane for percent-time-following, $L_d = L_t - (L_u + L_{pl} + L_{de})$	-3.18		
Adj. factor for the effect of passing lane on percent time-spent-following, $f_{pl,PTSF}$ (Exhibit 15-26)	0.61		

Percent time-spent-following including passing lane ³ , $PTSF_{pl}(\%)$ $PTSF_{pl} = PTSF_d [L_u + L_d + f_{pl, PTSF} L_{pl} + ((1 + f_{pl, PTSF})/2) L_{de}] / L_t$	53.0
Level of Service and Other Performance Measures⁴	
Level of service including passing lane LOS_{pl} (Exhibit 15-3)	C
Peak 15-min total travel time, $TT_{15}(\text{veh-h})$ $TT_{15} = VMT_{15}/ATS_{pl}$	14.9
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	550.0
Effective width, W_v (Eq. 15-29) ft	16.00
Effective speed factor, S_f (Eq. 15-30)	5.07
Bicycle level of service score, BLOS (Eq. 15-31)	12.36
Bicycle level of service (Exhibit 15-4)	F
Notes	
1. If $LOS_d = F$, passing lane analysis cannot be performed. 2. If $L_d < 0$, use alternative Equation 15-18. 3. If $L_d < 0$, use alternative Equation 15-16. 4. v/c, VMT_{15} and VMT_{60} are calculated on Directional Two-Lane Highway Segment Worksheet.	

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET WITH PASSING LANE WORKSHEET			
General Information		Site Information	
Analyst	Kelly Ash	Highway of Travel	US-40
Agency or Company	Horrocks Engineers	From/To	MP 104.5 to 110
Date Performed	1/3/2013	Jurisdiction	UDOT
Analysis Time Period	PM Peak Hour	Analysis Year	2012
Project Description: Northbound Existing			
Input Data			
<div style="display: flex; justify-content: space-between; align-items: center;"> <div> <input checked="" type="checkbox"/> Class I highway <input type="checkbox"/> Class II highway <input type="checkbox"/> Class III highway </div> <div style="text-align: center;"> </div> </div>			
Shoulder width (ft)	4.0		
Lane Width (ft)	12.0		
Segment Length (mi)	5.5		
Total length of analysis segment, L_t	5.5		
Length of two-lane highway upstream of the passing lane, L_u	0.6		
Length of passing lane including tapers, L_{pl}	1.8		
Average travel speed, ATS_d (from Directional Two-Lane Highway Segment Worksheet)	49.1		
Percent time-spent-following, $PTSF_d$ (from Directional Two-Lane Highway Segment Worksheet)	81.2		
Level of service ¹ , LOS_d (from Directional Two-Lane Highway Segment Worksheet)	E		
Average Travel Speed			
Length of the downstream highway segment within the effective length of passing lane for average travel speed, L_{de} (Exhibit 15-23)	1.70		
Length of two-lane highway downstream of effective length of the passing lane for avg travel speed, L_d $L_d = L_t - (L_u + L_{pl} + L_{de})$	1.40		
Adj. factor for the effect of passing lane on average speed, f_{pl} (Exhibit 15-28)	1.11		
Average travel speed including passing lane ² , $ATS_{pl} = (ATS_d * L_t) / (L_u + L_d + (L_{pl}/f_{pl}) + (2L_{de}/(1+f_{pl,ATS})))$	51.6		
Percent free flow speed including passing lane, $PFFS_{pl} = (ATS_{pl} / FFS)$	84.0		
Percent Time-Spent-Following			
Length of the downstream highway segment within the effective length of passing lane for percent time-spent-following, L_{de} (Exhibit 15-23)	5.30		
Length of two-lane highway downstream of effective length of the passing lane for percent-time-following, $L_d = L_t - (L_u + L_{pl} + L_{de})$	-2.20		
Adj. factor for the effect of passing lane on percent time-spent-following, $f_{pl,PTSF}$ (Exhibit 15-26)	0.62		

Percent time-spent-following including passing lane ³ , $PTSF_{pl}(\%)$	58.8
$PTSF_{pl} = PTSF_d [L_u + L_d + f_{pl, PTSF_{pl}} ((1 + f_{pl, PTSF})/2) L_{de}] / L_t$	
Level of Service and Other Performance Measures⁴	
Level of service including passing lane LOS_{pl} (Exhibit 15-3)	C
Peak 15-min total travel time, $TT_{15}(\text{veh-h})$ $TT_{15} = VMT_{15}/ATS_{pl}$	18.6
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	696.6
Effective width, W_v (Eq. 15-29) ft	16.00
Effective speed factor, S_t (Eq. 15-30)	5.07
Bicycle level of service score, BLOS (Eq. 15-31)	12.48
Bicycle level of service (Exhibit 15-4)	F
Notes	
1. If $LOS_d = F$, passing lane analysis cannot be performed. 2. If $L_d < 0$, use alternative Equation 15-18. 3. If $L_d < 0$, use alternative Equation 15-16. 4. v/c, VMT_{15} and VMT_{60} are calculated on Directional Two-Lane Highway Segment Worksheet.	

US-40 (MP 106 to 110) Crash Level Only Info, 2009-2011						
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Year	No. of Crashes	Crash Rate ^a	No. of Severe Crashes	Severe Crash Rate ^b	AADT	Average Severity ^c
2009	20	1.76	2	17.60	7,785	1.69
2010	10	0.87	1	8.71	7,865	1.88
2011	20	1.65	0	0.00	8,320	1.53
Total	50	1.43	3	8.57		1.65
Road Classification:		Rural Principal Arterial				
UDOT Averages:		1.56 ± 0.13		7.6 ± 1.3	0 to 30K	1.50

^a Crashes per Million Vehicle Miles Traveled

^b Severe Crashes (Incapacitating Injury or Fatal) per 100 Million Vehicle Miles Traveled

^c Crash Severity ranges from 1 (No Injury) to 5 (Fatality)

Manner of Collision Clusters									
US-40 (MP 106 to 110) Crash Level Only Info, 2009-2011									
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Crash Clusters	Angle	Rear End	Side Swipe	Rear to Rear	Single Vehicle	Total Crashes	Location		
Milepost	1	2	4 & 5	8	96		MP Ref	Street	
106.00	106.10	0	0	0	0	1	1		
106.10	106.20	4	3	2	0	1	10	106.134	6250 South (Route 1542)
106.20	106.30	0	1	1	0	0	2		
106.30	106.40	0	1	0	0	0	1		
106.40	106.50	0	0	0	0	0	0		
106.50	106.60	0	1	0	0	0	1		
106.60	106.70	0	0	0	0	0	0		
106.70	106.80	0	0	0	0	1	1		
106.80	106.90	0	1	0	0	1	2		
106.90	107.00	0	0	0	0	0	0		
107.00	107.10	0	0	0	0	0	0		
107.10	107.20	0	0	0	0	0	0		
107.20	107.30	0	0	0	0	0	0		
107.30	107.40	0	0	0	0	1	1		
107.40	107.50	0	0	0	0	1	1		
107.50	107.60	0	0	0	0	2	2		
107.60	107.70	0	0	0	0	0	0	107.628	4765 South (Route 1548)
107.70	107.80	0	0	0	0	1	1		
107.80	107.90	0	0	1	0	1	2		
107.90	108.00	0	1	0	0	0	1		
108.00	108.10	0	0	1	0	1	2		
108.10	108.20	0	0	0	0	0	0		
108.20	108.30	0	0	0	0	1	1		
108.30	108.40	0	0	1	0	0	1	108.390	4000 South
108.40	108.50	0	0	0	0	0	0		
108.50	108.60	0	0	0	0	0	0	108.553	3755 South (Route 1546)
108.60	108.70	0	0	0	0	0	0		
108.70	108.80	0	0	0	0	0	0		
108.80	108.90	0	0	0	0	0	0		
108.90	109.00	1	0	0	0	0	1		
109.00	109.10	0	0	0	0	0	0		
109.10	109.20	1	0	0	0	1	2		
109.20	109.30	0	0	0	0	0	0		
109.30	109.40	0	0	0	0	0	0		
109.40	109.50	0	0	0	0	2	2		
109.50	109.60	1	1	5	0	5	12	109.538	SR-87 (3000 South)
109.60	109.70	0	0	0	0	1	1		
109.70	109.80	0	0	0	0	1	1		
109.80	109.90	0	0	0	0	1	1		
109.90	110.00	0	0	0	0	0	0		
Total:	7	9	11	0	23	50			
Percentage:	14%	18%	22%	0%	46%	100%			

Crash Severity Clusters									
US-40 (MP 106 to 110) Crash Level Only Info, 2009-2011									
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Crash Clusters		No Injury	Possible Injury	Non-Incapacitating Injury	Incapacitating Injury	Fatal	Total Crashes	Location	
Milepost		1	2	3	4	5		MP Ref	Street
106.00	106.10	1	0	0	0	0	1		
106.10	106.20	5	2	2	1	0	10	106.134	6250 South (Route 1542)
106.20	106.30	1	0	0	1	0	2		
106.30	106.40	0	1	0	0	0	1		
106.40	106.50	0	0	0	0	0	0		
106.50	106.60	0	0	1	0	0	1		
106.60	106.70	0	0	0	0	0	0		
106.70	106.80	1	0	0	0	0	1		
106.80	106.90	1	0	1	0	0	2		
106.90	107.00	0	0	0	0	0	0		
107.00	107.10	0	0	0	0	0	0		
107.10	107.20	0	0	0	0	0	0		
107.20	107.30	0	0	0	0	0	0		
107.30	107.40	1	0	0	0	0	1		
107.40	107.50	1	0	0	0	0	1		
107.50	107.60	2	0	0	0	0	2		
107.60	107.70	0	0	0	0	0	0	107.628	4765 South (Route 1548)
107.70	107.80	1	0	0	0	0	1		
107.80	107.90	2	0	0	0	0	2		
107.90	108.00	1	0	0	0	0	1		
108.00	108.10	2	0	0	0	0	2		
108.10	108.20	0	0	0	0	0	0		
108.20	108.30	1	0	0	0	0	1		
108.30	108.40	1	0	0	0	0	1	108.390	4000 South
108.40	108.50	0	0	0	0	0	0		
108.50	108.60	0	0	0	0	0	0	108.553	3755 South (Route 1546)
108.60	108.70	0	0	0	0	0	0		
108.70	108.80	0	0	0	0	0	0		
108.80	108.90	0	0	0	0	0	0		
108.90	109.00	0	1	0	0	0	1		
109.00	109.10	0	0	0	0	0	0		
109.10	109.20	1	0	1	0	0	2		
109.20	109.30	0	0	0	0	0	0		
109.30	109.40	0	0	0	0	0	0		
109.40	109.50	1	1	0	0	0	2		
109.50	109.60	10	0	2	0	0	12	109.538	SR-87 (3000 South)
109.60	109.70	0	0	0	0	1	1		
109.70	109.80	1	0	0	0	0	1		
109.80	109.90	0	1	0	0	0	1		
109.90	110.00	0	0	0	0	0	0		
Total		34	6	7	2	1	50		

US-40 (MP 106 to 110) Crash/Veh Level Only Info, 2009-2011										
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Crash Clusters		NB	SB	EB	WB	Not Provided	N/A	Total Vehicles Involved in Crashes	Location	
Milepost		1	2	3	4	89			MP Ref	Street
106.00	106.10	1	0	0	0	0	0	1		
106.10	106.20	6	3	4	7	0	0	20	106.134	6250 South (Route 1542)
106.20	106.30	0	0	4	0	0	0	4		
106.30	106.40	1	1	0	0	0	0	2		
106.40	106.50	0	0	0	0	0	0	0		
106.50	106.60	0	0	2	0	0	0	2		
106.60	106.70	0	0	0	0	0	0	0		
106.70	106.80	0	0	1	0	0	0	1		
106.80	106.90	0	0	3	0	0	0	3		
106.90	107.00	0	0	0	0	0	0	0		
107.00	107.10	0	0	0	0	0	0	0		
107.10	107.20	0	0	0	0	0	0	0		
107.20	107.30	0	0	0	0	0	0	0		
107.30	107.40	0	0	1	0	0	0	1		
107.40	107.50	0	0	0	1	0	0	1		
107.50	107.60	0	0	1	1	0	0	2		
107.60	107.70	0	0	0	0	0	0	0	107.628	4765 South (Route 1548)
107.70	107.80	1	0	0	0	0	0	1		
107.80	107.90	0	2	0	1	0	0	3		
107.90	108.00	0	0	2	0	0	0	2		
108.00	108.10	1	1	1	0	0	0	3		
108.10	108.20	0	0	0	0	0	0	0		
108.20	108.30	0	1	0	0	0	0	1		
108.30	108.40	0	1	1	0	0	0	2	108.390	4000 South
108.40	108.50	0	0	0	0	0	0	0		
108.50	108.60	0	0	0	0	0	0	0	108.553	3755 South (Route 1546)
108.60	108.70	0	0	0	0	0	0	0		
108.70	108.80	0	0	0	0	0	0	0		
108.80	108.90	0	0	0	0	0	0	0		
108.90	109.00	0	0	1	1	0	0	2		
109.00	109.10	0	0	0	0	0	0	0		
109.10	109.20	0	0	0	3	0	0	3		
109.20	109.30	0	0	0	0	0	0	0		
109.30	109.40	0	0	0	0	0	0	0		
109.40	109.50	0	0	1	1	0	0	2		
109.50	109.60	0	10	4	5	0	0	19	109.538	SR-87 (3000 South)
109.60	109.70	1	0	0	0	0	0	1		
109.70	109.80	0	0	0	1	0	0	1		
109.80	109.90	0	0	0	1	0	0	1		
109.90	110.00	0	0	0	0	0	0	0		
Total		11	19	26	22	0	0	78		

Single Vehicle Crashes - First Harmful Event														
US-40 (MP 106 to 110) Crash/Veh Level Only Info, 2009-2011														
CONFIDENTIAL: This report is protected under 23 USC 409														
Crash Clusters		Overturn/ Rollover	Fire/ Explosion	Animal - Wild	Animal - Domestic	Guardrail	Delineator Post	Utility Pole/ Light Support	Embankment	Fence	Other Fixed Object	Total Vehicles Involved in Crashes	Location	
Milepost		7	10	25	26	40	52	54	58	62	69		MP Ref	Street
106.00	106.10	0	0	0	0	0	1	0	0	0	0	1		
106.10	106.20	0	1	0	0	0	0	0	0	0	0	1	106.134	6250 South (Route 1542)
106.20	106.30	0	0	0	0	0	0	0	0	0	0	0		
106.30	106.40	0	0	0	0	0	0	0	0	0	0	0		
106.40	106.50	0	0	0	0	0	0	0	0	0	0	0		
106.50	106.60	0	0	0	0	0	0	0	0	0	0	0		
106.60	106.70	0	0	0	0	0	0	0	0	0	0	0		
106.70	106.80	0	0	0	0	1	0	0	0	0	0	1		
106.80	106.90	0	0	0	1	0	0	0	0	0	0	1		
106.90	107.00	0	0	0	0	0	0	0	0	0	0	0		
107.00	107.10	0	0	0	0	0	0	0	0	0	0	0		
107.10	107.20	0	0	0	0	0	0	0	0	0	0	0		
107.20	107.30	0	0	0	0	0	0	0	0	0	0	0		
107.30	107.40	0	0	1	0	0	0	0	0	0	0	1		
107.40	107.50	0	0	1	0	0	0	0	0	0	0	1		
107.50	107.60	0	0	1	1	0	0	0	0	0	0	2		
107.60	107.70	0	0	0	0	0	0	0	0	0	0	0	107.628	4765 South (Route 1548)
107.70	107.80	0	0	0	0	0	0	0	1	0	0	1		
107.80	107.90	0	0	0	1	0	0	0	0	0	0	1		
107.90	108.00	0	0	0	0	0	0	0	0	0	0	0		
108.00	108.10	0	0	1	0	0	0	0	0	0	0	1		
108.10	108.20	0	0	0	0	0	0	0	0	0	0	0		
108.20	108.30	0	0	1	0	0	0	0	0	0	0	1		
108.30	108.40	0	0	0	0	0	0	0	0	0	0	0	108.390	4000 South
108.40	108.50	0	0	0	0	0	0	0	0	0	0	0		
108.50	108.60	0	0	0	0	0	0	0	0	0	0	0	108.553	3755 South (Route 1546)
108.60	108.70	0	0	0	0	0	0	0	0	0	0	0		
108.70	108.80	0	0	0	0	0	0	0	0	0	0	0		
108.80	108.90	0	0	0	0	0	0	0	0	0	0	0		
108.90	109.00	0	0	0	0	0	0	0	0	0	0	0		
109.00	109.10	0	0	0	0	0	0	0	0	0	0	0		
109.10	109.20	0	0	1	0	0	0	0	0	0	0	1		
109.20	109.30	0	0	0	0	0	0	0	0	0	0	0		
109.30	109.40	0	0	0	0	0	0	0	0	0	0	0		
109.40	109.50	0	0	1	0	0	0	0	0	1	0	2		
109.50	109.60	0	0	3	0	0	0	1	1	0	0	5	109.538	SR-87 (3000 South)
109.60	109.70	1	0	0	0	0	0	0	0	0	0	1		
109.70	109.80	0	0	1	0	0	0	0	0	0	0	1		
109.80	109.90	0	0	0	0	0	0	0	0	0	1	1		
109.90	110.00	0	0	0	0	0	0	0	0	0	0	0		
Total		1	1	11	3	1	1	1	2	1	1	23		

Structure Inventory and Appraisal Sheet (English Units)

Bridge Key: 0E1096		Agency ID: 0E1096		SR: 77.5		SD/FO: ND	
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IDENTIFICATION

State 1: 49 Utah Struc Num 8: 0E1096

Facility Carried 7: US-40 (SR-40) Location 9: 1.4 MILE NORTH OF MYTON

Rte.(On/Under)5A: Route On Structure Rte. Signing Prefix 5B: 2 U.S. Numbered Hwy

Level of Service 5C: 1 Mainline Rte. Number 5D: 00040

Directional Suffix 5E: 0 N/A % Responsibility: 0

SHD District 2: Region 3 County Code 3: Duchesne

Place Code 4: County Mile Post 11: 106.380 mi

Feature Intersected 6: DRY GULCH CANAL

Latitude 16: 40d 12' 54" Longitude 17: 110d 04' 02"

Border Bridge Code 98: Not Applicable (P)

Border Bridge Number 99: NA

INSPECTION

Frequency 91: 24 months Inspection Date 90: 7/18/2011 Next Inspection: 07/18/2013

FC Frequency 92A: NA FC Inspection Date 93A: NA Next FC Inspection: NA

UW Frequency 92B: NA UW Inspection Date 93B: NA Next UW Inspection: NA

SI Frequency 92C: NA SI Date 93C: NA Next SI: NA

Element Frequency: 24 months Element Inspection Date: 07/18/2011 Next Elem. Insp. Due: 07/18/2013

STRUCTURE TYPE AND MATERIALS

Number of Approach Spans 46: 0 Number of Spans Main Unit 45: 1

Main Span Material/Design 43A/B:

1 Concrete 19 Culvert

Deck Type 107: N N/A (NBI)

Wearing Surface 108A: N N/A (no deck (NBI))

Membrane 108B: N N/A (no deck (NBI))

Deck Protection 108C: N N/A (no deck (NBI))

CLASSIFICATION

Defense Highway 100: 0 Not a STRAHNET hwy Parallel Structure 101: No || bridge exists

Direction of Traffic 102: 2 2-way traffic Temporary Structure 103: Not Applicable (P)

Highway System 104: 1 On the NHS NBIS Length 112: Long Enough

Toll Facility 20: 3 On free road Functional Class 26: 02 Rural Other Princ

Defense Hwy 110: 0 Not a STRAHNET Historical Significance 37: 5 Not eligible for NRHP

Owner 22: 01 01 State Highway Agency

Custodian 21: 01 01 State Highway Agency

AGE AND SERVICE

Year Built 27: 1958 Year Reconstructed 106: -4

Type of Service on 42A: 1 Highway

Type of Service under 42B: 5 Waterway

Lanes on 28A: 3 Lanes Under 28B: 0 Detour Length 19: 9.9 mi

ADT 29: 8,319 Truck ADT 109: 19 % Year of ADT 30: 2011

CONDITION

Deck 58: N N/A (NBI) Super 59: N N/A (NBI) Sub 60: N N/A (NBI)

Culvert 62: 7 Minor Deterioration Channel/Channel Protection 61: 7 Minor Damage

GEOMETRIC DATA

Length Max Span 48: 25.9 ft Structure Length 49: 27.9 ft

Curb/Sdwk Width L 50A: 0.0 ft Curb/Sidewalk Width R 50B: 0.0 ft

Width Curb to Curb 51: 0.0 ft Width Out to Out 52: 0.0 ft

Approach Roadway Width 32: 47.9 ft Median 33: 0 No median (w/ shoulders)

Deck Area: . sq. ft

Skew 34: 20.00 ° Structure Flared 35: 0 No flare

Vertical Clearance 10: 99.02 ft Horiz. Clearance 47: 47.90 ft

Minimum Vertical Clearance Over Bridge 53: 99.0 ft

Minimum Vertical Underclearance Reference 54A: N Feature not hwy or RR

Minimum Vertical Underclearance 54B: 0.0 ft

Minimum Lateral Underclearance Reference R 55A: N Feature not hwy or RR

Minimum Lateral Underclearance R 55: 0.0 ft

Minimum Lateral Underclearance L 56: 0.0 ft

LOAD RATING AND POSTING

Inventory Rating Method 65: 1 LF Load Factor Operating Rating Method 63: 1 LF Load Factor

Inventory Rating 66: HS27.2 Operating Rating 64: HS45.4

Design Load 31: 5 MS 18 (HS 20) Posting 70: 5 At/Above Legal Loads

Posting status 41: A Open, no restriction

PROPOSED IMPROVEMENTS

Bridge Cost 94: \$ 1 Type of Work 75: Unknown (P)

Roadway Cost 95: \$ 1 Length of Improvement 76: 10,399

Total Cost 96: \$ 1 Future ADT 114: 10,399

Year of Cost Estimate 97: Unknown Year of Future ADT 115: 2031

APPRAISAL

Bridge Rail 36A: N N/A or not required Approach Rail 36C: 0 Substandard

Transition 36B: N N/A or not required Approach Rail Ends 36D: 0 Substandard

Str. Evaluation 67: 7 Deck Geometry 68: N Not applicable (NBI)

Underclearance, Vertical and Horizontal 69: N Not applicable (NBI)

Waterway Adequacy 71: 6 Equal Minimum Approach Alignment 72: 8 Equal Desirable Crit

Scour Critical 113: 8 Stable Above Footing

ELEMENT CONDITION STATE DATA

Str Unit	Elm/Env	Description	Units	Total Qty	% in 1	Qty. St. 1	% in 2	Qty. St. 2	% in 3	Qty. St. 3	% in 4	Qty. St. 4	% in 5	Qty. St. 5
2	241/3	Concrete Culvert	(LF)	66	97 %	62	3 %	3	0 %	0	0 %	0	0 %	0

NAVIGATION DATA

Navigation Control 38: N NA-no waterway

Vertical Clearance 39: 0.0 ft Horizontal Clearance 40: 0.0 ft

Pier Protection 111: 1 Not Required Lift Bridge Vertical Clearance 116:

Bridge and Inspection Comments**1/8/2013 Page 1 of 2****Bridge Key**
0E1096**Structure Name:**
Dry Gulch Canal Culvert on US-40, North of Myton**Comment
Code****Seq. Bridge Comments**

APR	2	10/26/89 pavement overlay on approaches is rough and rutted. Install approach barriers and guardrail to meet current standards.
APR	3	05/10/91 Some collision damage to east side guardrail.
APR	4	08/20/93 Above conditions remain the same.
APR	5	06/22/95 Above conditions still the same.
APR	6	6/19/97 Same, the guardrail at the east side is not standard height.
APR	7	06/24/99 Same as the above. No change.
APR	25	06/05/2001 The dirt remain underneath the guardrail on both sides of the roadway. The damaged railing on the east side also remains.
APR	27	07/31/2003 Approach roadway is in very good condition. New guardrail was being installed at the time of this inspection.
APR	33	07/10/2007 New guardrail and attenuation. All in good condition.
CHG	28	08/08/2005 Terri Taylor, Neal Pierce full pics taken.
CHG	31	07/10/2007 Dale, Brenda
CHG	34	07/15/2009 Brenda R., Clint M.
CHG	37	07/18/2011 Dale, Justin
CHN	8	10/26/89 Some bank erosion up and down stream of structure, needs riprap up and downstream of structure on both sides.
CHN	9	05/10/91 Same as indicated above.
CHN	10	08/20/93 Above conditions remain the same.
CHN	11	06/22/95 Above conditions still the same.
CHN	12	6/19/97 Not too bad at this time.
CHN	13	06/24/99 Heavy; vegetation on the canal banks help control any erosion.
CHN	29	08/08/2005 No worse. Conditions remain the same.
CHN	35	07/15/2009 Controlled flow.
CREATE	1	0E1096 created.
CUL	14	10/26/89 Scour beginning downstream of structure minor at present, 6-12 inches of silt in barrel.
CUL	15	05/10/91 Structure does have a silting problem, but no structural problems
CUL	16	08/20/93 Above conditions remain the same, with the following. Asphalt wearing surface is tracking badly.
CUL	17	06/22/95 New asphalt wearing surface has been installed across structure. Silting still remains a problem thru the barrel of the culvert.
CUL	18	6/19/97 Some small cracks with efflorescence in the backwalls.
CUL	19	06/24/99 Minor cracking and the silting problem remain, but are no worse.
CUL	26	07/31/2003 Cracking noted above remains unchanged.
CUL	30	08/08/2005 No worse. Conditions remain the same.
CUL	32	07/10/2007 Some random tight cracking in the culvert walls and top portion. All in very good condition.
CUL	36	07/15/2009 The face of the south headwall has a horizontal 1 ft plus crack. All cracking elsewhere is tight.
CUL	38	07/18/2011 Culvert is in very good condition. No spalls, excessive cracking or indication of settlement.
DRN	20	05/10/91 Much dirt piled adjacent to curbs on east side of structure.

Bridge and Inspection Comments**1/8/2013 Page 2 of 2****Comment**

Code	Seq.	Bridge Comments
DRN	21	08/20/93 Above condition remains the same, with the following. Weeds are growing along guardrail so that you can hardly see the rail.
DRN	22	06/22/95 Weeds and dirt have been cleaned out from in front of the curbs.
DRN	23	6/19/97 A lot of dirt at the east side.
DRN	24	06/24/99 Dirt and vegetation in front of the guardrail remains a problem.

Comment

INSPEY	Code	Seq.	Inspection Comments
AOTO	SHDRSP	2	07/10/2007 No recommendations.
AOTO	CREATE	1	Created inspection AOTO for structure 0E1096
EPIN	SHDRSP	2	07/31/2003 No recommendations.
EPIN	CREATE	1	Created inspection EPIN for structure 0E1096
MWAF	CREATE	1	0E1096, MWAF created.
MWAF	SFTY	51	Rebuild the approach guardrail to meet current standards.
MWAF	CNTRCT	50	None
MWAF	SHDRSP	53	guardrail at both ends of the structure. Repair the damaged
MWAF	SHDRSP	52	Remove the debris and asphalt under the
MWAF	SHDRSP	54	guardrail at the east end of the culvert.
PXRZ	SHDRSP	2	07/15/2009 No recommendations at this time.
PXRZ	CREATE	1	Created inspection PXRZ for structure 0E1096
TLLQ	SHDRSP	2	07/18/2011 Continue to perform annual code one maintenance on all structures.
TLLQ	CREATE	1	Created inspection TLLQ for structure 0E1096
XJWN	CREATE	1	Created inspection XJWN for structure 0E1096
XJWN	SHDRSP	2	08/08/2005 No recommendations at this time.
ZSGJ	SHDRSP	2	06/05/2001 Remove the debris and dirt from under the guardrail on both sides of the roadway. repair the damages guardrail on the east side of the roadway
ZSGJ	SFTY	3	06/05/2001 Rebuild the approach guardrail and approach ends to meet current standards.
ZSGJ	REC	4	06/05/200101 Inspection party consisted of Ron Rasmussen, Dan Adams and Gary Lujan-Shed
ZSGJ	CREATE	1	Created inspection ZSGJ for structure 0E1096

US-40 MP 106-109, Myton Bench Roadway Widening

Photographs





